

ABBREVIATIONS			
NOTE: ALL ABBREVIATIONS MAY NOT BE USED			
AD AIR COND APD BD BHP BTU BTUH CFH CFM CLG COMP COND	ACCESS DOOR AIR CONDITION(—ING,—ED) AIR PRESSURE DROP BALANCING DAMPER BRAKE HORSE POWER BRITISH THERMAL UNIT BTU/HOUR CUBIC FEET PER HOUR CUBIC FEET PER MINUTE COOLING COMPONENT CONDENS(—ER, —ING, —ATION) CONTROL VALVE COLD WATER DIAMETER DISCHARGE DEPTH OR DEEP DRY BULB TEMPERATURE (E) EXISTING ENERGY EFFICIENCY RATIO EFF EFFICIENCY EG ETHYLENE GLYCOL ELEC ELECTRIC ELEV ELEVATION ENT ENTERING EVAP EVAPORAT(—E, —ING, —ED, —OR)	MCA MFR MIN N/A NC NIC NO NPSH NTS OA OD OZ PD PG PH PPM PRESS PSF PSI PSIA PSIG RA RECIRC REFR REQD RLA RPM RW SA SC SOFM SCW SF SH SL SP SPECS(S) SQ STD STM TEMP TD THERM TOT TSTAT V VAC VAV VEL VENT VERT VFD VOL WC WG WFD WTR WT WB YR	MINIMUM CIRCUIT AMPS MANUFACTURER MINIMUM NOT APPLICABLE NORMALLY CLOSED NOISE CRITERIA NOT IN CONTRACT NORMALLY OPEN NET POSITIVE SUCTION HEAD NOT TO SCALE OUTSIDE AIR OUTSIDE DIAMETER OUNCE PRESSURE DROP OR DIFFERENCE PROPYLENE GLYCOL PHASE PARTS PER MILLION PRESSURE POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH PSI ABSOLUTE PSI GAUGE THERMAL RESISTANCE RETURN AIR REGULATE REFRIGERATION REQUIRED RATED --- AMPS REVOLUTIONS PER MINUTE RAINWATER SUPPLY AIR SHADING COEFFICIENT STANDARD CUBIC FEET PER MINUTE SOFT COLD WATER SAFETY FACTOR SENSIBLE HEAT SEA LEVEL STATIC PRESSURE SPECIFICATION(S) SQUARE STANDARD STEAM TEMPERATURE TEMP. DROP OR DIFF. THERMAL TOTAL THERMOSTAT VOLUME VARIABLE AIR VOLUME VELOCITY VENT, VENTILATION VERTICAL VARIABLE FREQUENCY DRIVE VOLUME WATER COLUMN WATER GAUGE WATER PRESSURE DROP WATER WEIGHT WET BULB TEMP YEAR

DEFINITIONS	
NOTE: ALL DEFINITIONS MAY NOT BE USED.	
INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.	
DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", "AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.	
APPROVE: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.	
FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."	
INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS TO MAKE THE ITEM FULLY OPERATIONAL."	
PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."	
INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.	

SYMBOL LEGEND		
SYMBOL	DESCRIPTION	
DUCTWORK		
SINGLE LINE	DOUBLE LINE	DESCRIPTION
		RECTANGULAR SUPPLY DUCT UP
		RECTANGULAR SUPPLY DUCT DOWN
		RECTANGULAR RETURN DUCT UP
		RECTANGULAR RETURN DUCT DOWN
		RECTANGULAR EXHAUST DUCT UP
		RECTANGULAR EXHAUST DUCT DOWN
		ROUND DUCT UP
		ROUND DUCT DOWN
		ACCOUSTICALLY LINED RECTANGULAR DUCT
		90° RECTANGULAR ELBOW WITH TURNING VANES
		90° RADIUS ELBOW R=1.5
		DUCT SIZE OR SHAPE TRANSITION
		OPPOSED BLADE BALANCING DAMPER (O.B.D.) IN RECT DUCT
		BUTTERFLY BALANCING DAMPER IN ROUND DUCTS
		COMBINATION TEE
		SPLITTER DAMPER
		SQUARE OR RECTANGULAR CEILING DIFFUSER
		ROUND CEILING DIFFUSER
		SIDEWALL REGISTER SUPPLY OR RETURN
		ROUND FLEXIBLE DUCT
		RETURN GRILLE
		EXHAUST GRILLE
		FIRE/SMOKE DAMPER
		FIRE DAMPER
		SMOKE DAMPER
		FLEXIBLE CONNECTION

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
HVAC SYMBOLS	
	THERMOSTAT
	TEMPERATURE SENSOR
	HUMIDISTAT
REFERENCE AND LINE SYMBOLS	
	DETAIL INDICATOR: # INDICATES DETAIL NUMBER, SHEET INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
	ROOM OR SPACE NUMBER.
	KEYNOTE INDICATOR.
	REVISION INDICATOR.
	EQUIPMENT INDICATOR.
	DIFFUSER/GRILLE INDICATOR.
	DIFFUSER/GRILLE INDICATOR.
	BREAK, STRAIGHT
	BREAK, ROUND.
	MATCH LINE INDICATOR
	HIDDEN FEATURES LINE: HIDDEN, THIN LINE.
	CONTRACT LIMIT LINE: DASHDOT, WIDE LINE.
	NEW CONNECTION POINT TO EXISTING

MECHANICAL SHEET INDEX	
SHEET NO	SHEET TITLE
M.001	MECHANICAL COVER SHEET
M.101	MECHANICAL PLANS
M.501	MECHANICAL DETAILS
M.601	MECHANICAL SCHEDULES AND SPECIFICATIONS

## TESTING ADJUSTING AND BALANCING NOTES

- CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TESTING ADJUSTING AND BALANCING FOR THIS PROJECT.
- TESTING, ADJUSTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THESE NOTES AND SPECIFICATIONS.
- THE MECHANICAL SYSTEMS SHALL BE TESTED, ADJUSTED AND BALANCED, INCLUDING SUPPLY AIR SYSTEM, RETURN AIR SYSTEM, EXHAUST AIR SYSTEM, OUTSIDE AIR SYSTEM AND ALL ASSOCIATED EQUIPMENT.
- CONTRACTOR PERFORMING TESTING ADJUSTING AND BALANCING WORK SHALL BE EITHER AABC OR NEBB CERTIFIED.
- TESTING ADJUSTING AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE NEBB OR AABC TEST PROCEDURES.
- TESTING ADJUSTING AND BALANCING REPORT FORMS SHALL BE STANDARD FORMS FROM EITHER AABC OR NEBB.
- CONTRACTOR SHALL VERIFY QUANTITIES AND LOCATIONS OF ALL BALANCING DEVICES. CONTRACTOR SHALL VERIFY THAT THESE BALANCING DEVICES ARE ACCESSIBLE AN APPROPRIATE FOR BALANCING AND FOR EFFICIENT SYSTEM AND EQUIPMENT OPERATION PRIOR TO COMMENCING WORK.
- MECHANICAL AIR AND WATER SYSTEMS SHALL BE ADJUSTED TO WITHIN THE FOLLOWING TOLERANCES.  
SUPPLY: PLUS 5 TO PLUS 10 PERCENT  
RETURN: PLUS 5 TO PLUS 10 PERCENT  
EXHAUST FANS: PLUS 5 TO PLUS 10 PERCENT  
EQUIPMENT WITH FANS: PLUS 5 TO PLUS 10 PERCENT  
AIR OUTLETS AND INLETS: ZERO TO MINUS 10 PERCENT  
DOM. HW FLOW RATES: ZERO TO MINUS 10 PERCENT
- FINAL BALANCE REPORT SHALL INCLUDE TH FOLLOWING.  
TEST CONDITIONS FOR FANS AND PUMPS  
SYSTEM DIAGRAMS  
AIR CONDITIONING UNIT TEST REPORTS  
FAN TEST REPORTS  
AIR TERMINAL DEVICE REPORTS
- AFTER THE FINAL BALANCING REPORT IS SUBMITTED TO THE DESIGN ENGINEER AND OWNER, CONTRACTOR SHALL REQUEST THAT A FINAL INSPECTION BE MADE BY THE DESIGN ENGINEER. DURING THE FINAL INSPECTION, DESIGN ENGINEER MAY RANDOMLY SELECT MEASUREMENTS DOCUMENTS IN THE FINAL REPORT TO BE RECHECKED BY THE CONTRACTOR.
- APPROXIMATELY 90 DAYS AFTER SUBMISSION OF THE FINAL BALANCING REPORT, CONTRACTOR SHALL PERFORM ADDITIONAL TESTING ADJUSTING AND BALANCING TO VERIFY THAT BALANCED CONDITIONS ARE BEING MAINTAINED THROUGHOUT EACH SYSTEM AND TO CORRECT UNUSUAL CONDITIONS.
- ADDITIONAL TESTING ADJUSTING AND BALANCING SHALL BE MADE AS DIRECTED BY THE DESIGN ENGINEER TO CORRECT UNUSUAL CONDITIONS. ADDITIONAL TESTING WILL NOT EXCEED THREE (3) DAYS DURING THE FIRST SIX MONTHS OF OPERATION.
- IF INITIAL TESTING ADJUSTING AND BALANCING PROCEDURES WERE NOT PERFORMED DURING NEAR—PEAK SUMMER AND WINTER CONDITIONS, PERFORM ADDITIONAL TESTING ADJUSTING AND BALANCING DURING NEAR—PEAK SUMMER AND WINTER CONDITIONS.

## GENERAL EQUIPMENT NOTES

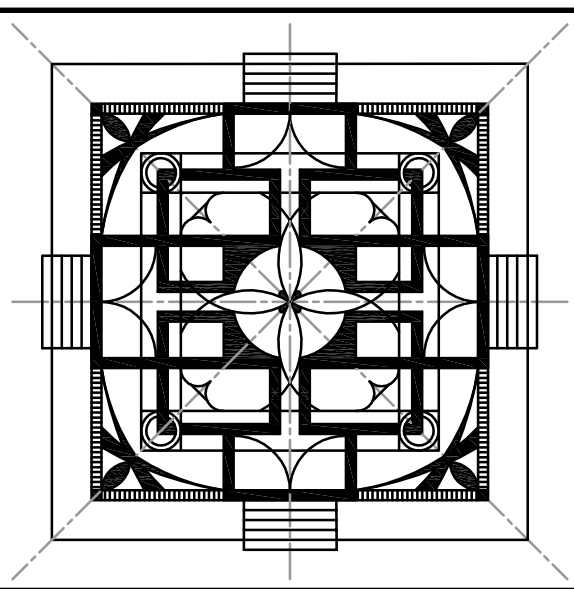
- ALL CAPACITIES ARE AT JOB SITE CONDITIONS AND ARE MINIMUM CAPACITY.
- ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED TO CONFORM WITH LOCAL SEISMIC REQUIREMENTS AND THE REQUIREMENTS OF THESE CONSTRUCTION DOCUMENTS.
- VERIFY ALL REQUIRED SERVICE CONNECTIONS, INCLUDING ELECTRICAL CHARACTERISTICS FOR ALL EQUIPMENT PRIOR TO ORDERING EQUIPMENT.
- ALL EQUIPMENT SHALL BE INDEPENDENTLY SUPPORTED FORM STRUCTURAL MEMBERS.
- ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.
- ALL SIMILAR EQUIPMENT SHALL BE OF THE SAME MANUFACTURER.
- AIR INLETS AND OUTLETS SHALL BE OF THE SAME MANUFACTURER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE HVAC EQUIPMENT CHECK—IN, SAFEKEEPING, AND DAMAGE.
- ALL FILTERS USED IN ALL SUPPLY AIR SYSTEM, USED PRIOR TO SUBSTANTIAL SHALL BE REPLACED PRIOR TO THE TEST RUN PERIOD.

## MECHANICAL GENERAL NOTES

- THE MECHANICAL DRAWINGS SHOW THE GENERAL DESIGN, ARRANGEMENT AND EXTENT OF THE MECHANICAL SYSTEM. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THESE DRAWINGS DO NOT SHOW ALL OFFSETS, BENDS OR ELBOWS NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. CONTRACTOR SHALL MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT.  
MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES OR MATERIAL REQUIRE PRIOR APPROVAL BY THE DESIGN ENGINEER.
- THE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND SHALL BE INTERPRETED AS IN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGHT SHOWN AND CALLOUT IN BOTH.
- THE ENTIRE MECHANICAL INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY ADOPTED BUILDING CODES, MECHANICAL CODE, PLUMBING CODE, ELECTRICAL CODE, AND ALL OTHER APPLICABLE CITY, COUNTY, STATE, AN FEDERAL CODES AN REGULATIONS IN EFFECT.
- THE ENTIRE MECHANICAL INSTALLATION SHALL CONFORM TO ANY CODES, RULES, REGULATIONS AND REQUIREMENTS OF THE BUILDING OWNER.
- PRIOR TO FABRICATION AND INSTALLATION OF ANY MECHANICAL COMPONENT THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL MECHANICAL WORK WITH ALL OTHER BUILDING TRADES, INCLUDING BUILDING TRADES HIRED DIRECTLY BY THE OWNER. WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.
- THE SPACE ABOVE ALL CEILINGS IS LIMITED. CAREFUL COORDINATION IS REQUIRED WITH ALL TRADES BEFORE ANY PIPE, DUCT, OR EQUIPMENT IS ORDERED AND/OR INSTALLED. ANY CONFLICTS AND/OR CHANGES FOUND DURING INSTALLATION THAT RESULTS FROM THE LACK OF COORDINATION BY THE CONTRACTORS DURING THE SHOP DRAWING PROCESS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL MECHANICAL INFORMATION IS NOT SHOWN ON THE PLUMBING DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW AND USE, WHERE APPROPRIATE, ALL THE MECHANICAL DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON THE DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE MECHANICAL SYSTEM WITHOUT USING THE INCLUDED DETAILS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW THE PIPING SCHEMATICS INCLUDED WITH THESE DRAWINGS FOR PIPING CONNECTIONS TO ALL MECHANICAL EQUIPMENT. THE PIPING SCHEMATICS SHOW DETAILED CONNECTIONS INCLUDING NECESSARY VALVES, FITTINGS, PRESSURE AND TEMPERATURE GAUGES, ETC. THAT ARE NOT SHOWN ON THE PIPING PLANS. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE MECHANICAL SYSTEM WITHOUT USING THE INCLUDED PIPING SCHEMATICS IS THE RESPONSIBILITY OF THE CONTRACTOR.
- THE STRUCTURE SHOWN ON ALL DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OF ANY PORTION OF THE BUILDING. COORDINATED ALL MOUNTING REQUIREMENTS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.
- ANY PART OF THE MECHANICAL INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACES BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL PERFORM THE WORK IN A MANNER THAT WILL CAUSE A MINIMUM DISRUPTION TO BUILDING TENANT USE AND SHALL COORDINATE THE WORK WITH THE BUILDING OWNER'S REPRESENTATIVE.
- SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL CEILING DIFFUSERS AND GRILLES.
- CONTRACTOR SHALL OPERATE THE SYSTEM AND DEMONSTRATED ALL ASPECTS OF THE SYSTEM TO THE ENGINEER AND/OR OWNER TO PROVE ALL SYSTEMS ARE OPERATIONAL.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A SET OF AS—BUILT REDLINED RECORD DRAINING AT THE PROJECT SITE. ALL CHANGES IN LAYOUT, ROUTING, EQUIPMENT, COMPONENTS, AND ACCESSORIES SHALL BE RECORDED. THESE REDLINED DRAWINGS SHALL BE GIVEN TO THE ARCHITECT/ENGINEER AFTER THE FINAL INSPECTION IN ACCORDANCE WITH SPECIFICATIONS.
- MODIFY AND EXTEND EXISTING FIRE SPRINKLER TO COMPLY WITH NFPA 13. DESIGN PROVIDED BY CONTRACTOR VIA DEFERED SUBMITTAL.

## DUCT CONSTRUCTION NOTES

- ALL DUCTWORK SHALL BE GALVANIZED SHEET META, EXCEPT WHERE INDICATED OTHERWISE.
- SHEET METAL DUCT STATIC PRESSURE CLASSIFICATION:  
SUPPLY AIR DUCT: 2" W.C.  
RETURN AIR DUCT: 2" W.C. (NEGATIVE)  
EXHAUST AIR DUCT: 2" W.C. (NEGATIVE)
- SEAL ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS TO SMACNA SEAL CLASS B.
- DO NOT USE GRAY DUCT TAPE, FOIL BACKED TAPE, OIL BASED CAULKING AND GLAZING COMPOUNDS TO SEAL METAL DUCTS.
- CROSS—BREAK DUCT SURFACES 19" THROUGH 60". USE ANGLE REINFORCING FOR DUCTS SURFACES OVER 60".
- ALL METAL LONGITUDINAL SEAMS SHALL BE PITTSBURG OR OTHER LISTED SMACNA LISTED SEAM. DO NOT USE BUTTON PUNCH SNAP—BACK SEAMS.
- SUSPEND METAL DUCTWORK NOT EXCEEDING 30" LONGEST SIDE AT EVERY JOINT. DO NOT EXCEED 10"—0" HANGER SPACING. USE 1" X 18 GAGE GALVANIZED STRAPS (MINIMUM) ATTACHED TO BOTTOM AND SIDES OF DUCT.
- SUSPEND METAL DUCTWORK EXCEEDING 30" LONGEST SIDE AT MAXIMUM 8"—0" SPACING USING ANGLES AND RODS.
- SUPPORT DUCTWORK FORM STRUCTURAL MEMBERS. ATTACHMENT TO ROOF DECK IS NOT ACCEPTABLE.
- DUCT SIZES SHALL BE VERIFIED FOR CLEARANCES AT THE JOB SITE PRIOR TO FABRICATION. DIMENSIONS MAY BE CHANGED TO ACCOMMODATE CONSTRUCTION CLEARANCES. FREE AREA OF DUCT SHALL BE MAINTAINED.
- DUCT TRANSITIONS SHALL BE CONSTRUCTED WITH SLOPE OF 1/4.
- PROVIDE ELBOWS AND CHANGES IN DIRECTION WITH SINGLE VANE TURNING VANES.



**SYMMETRY FIRST  
ARCHITECTS,  
LLC**

8600 Foundry Street  
Box 2069  
Savage, MD 20763  
240-568-0700  
240-568-0354 fax  
www.symmetryfirst.com

### STAMP

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 38508  
EXPIRATION DATE: MARCH 03, 2012

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### PROJECT PHASE

**BID  
DOCUMENTS**

### PROJECT TITLE

**A.O.C.  
TENANT  
BUILD-OUT**

2001 COMMERCE PARK DR.,  
SUITE 2001-B  
ANNAPOLIS, MD 21401

### REVISIONS

SYMBOL	DATE	ISSUED FOR
	10.21.11	PERMIT REVISION

PROJECT NUMBER	11-160
DATE	9.1.11
SCALE	AS NOTED

DRAWING TITLE  
**SHEET INDEX,  
SYMBOLS AND  
GENERAL NOTES**

SHEET NUMBER  
**M.001**